

# CentrePiece

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## Schools and house prices What's the link?



Tuition fees  
Mental illness  
Public sector pay

Gender gaps  
Doomsday cycle  
Multilingual cities

# CentrePiece



THE LONDON SCHOOL  
OF ECONOMICS AND  
POLITICAL SCIENCE ■

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## Editorial

'It's the economy, stupid': that catchphrase dominated the US presidential election campaign 20 years ago, which culminated in Bill Clinton ousting the sitting president, the first George Bush. The feeling that voters' decisions will be influenced primarily by concerns about jobs and taxes is echoed in this year's campaign. Many commentators are calling it 'the economy election' – and many economists are featuring in debates about which policies will best address the challenges facing the American economy.

One prominent example is Nick Bloom of Stanford University, who has long worked with the Centre for Economic Performance (CEP). His index of US economic policy uncertainty, described in this magazine earlier in the year, has been widely cited, including by the Fed chairman, Ben Bernanke. Nick is part of a CEP team that will soon be publishing a series of US election analyses, exploring research evidence on some of the key

policy battlegrounds – healthcare, inequality, trade, taxation and the 'fiscal cliff'.

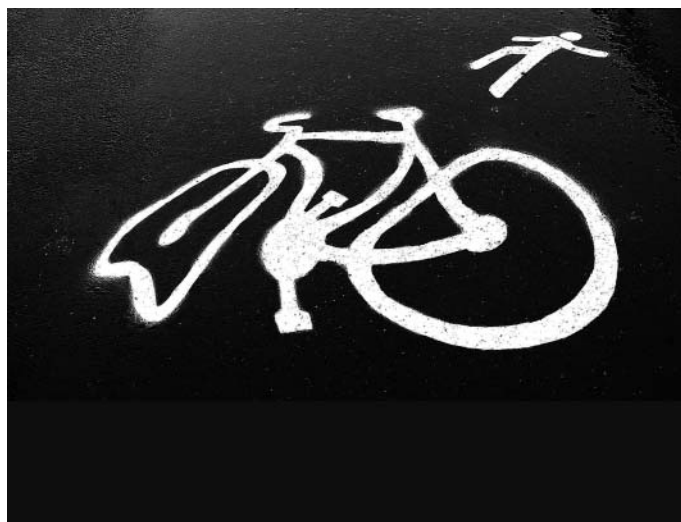
Here in the UK, policy discussions are focused on what can be done to get the economy growing. The LSE Growth Commission, co-chaired by CEP's director John Van Reenen and due to report by the end of the year, will provide some longer-term perspective for that debate. Meanwhile, John continues to warn of the dangers for growth of excessive fiscal austerity – not least on Twitter (@johnvanreenen). His predecessor, CEP's founder director Richard Layard, argued along similar lines in his recent 'manifesto for economic sense', written with Nobel laureate Paul Krugman.

One long-recognised driver of growth is education. As the new academic year gets underway, this issue of *CentrePiece* highlights how important it is for teenagers to understand the value of going to university, even in the new

world of high tuition fees. And our cover story by Steve Gibbons calculates how much the quality of schools is reflected in local house prices – the subject of many dinner party conversations.

Steve's article is the tenth in our series looking back at the 'big ideas' that have emerged from CEP research and the stories of their subsequent impact on policy. The previous surveys – on unemployment, inequality, social mobility, education, minimum wages, economic geography, competition and productivity, innovation and wellbeing – are all available on our website ([http://cep.lse.ac.uk/\\_new/publications/bigideas.asp](http://cep.lse.ac.uk/_new/publications/bigideas.asp)). And the breadth of continuing CEP work is reflected in articles here on topics ranging from what drives how much people earn to what will drive the next financial crisis.

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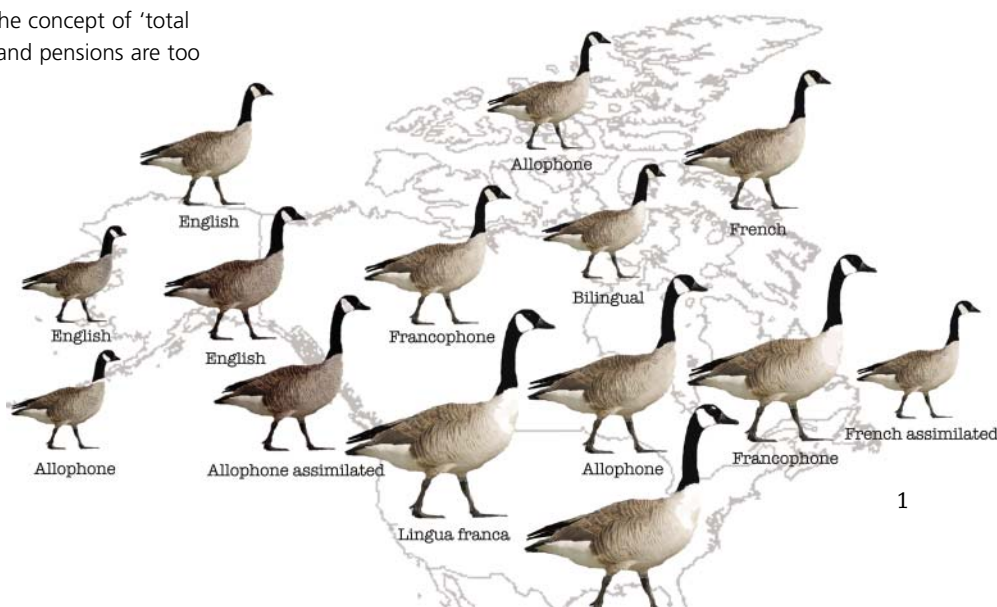
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**Steve Gibbons** describes how a series of influential CEP studies has confirmed the widespread belief that there is a link between house prices and the quality of local schools – and explains the nuances of the findings and their significance for public policy for education, cities and social mobility.

# Big ideas

## Valuing schooling through house prices

**I**t is a truth universally acknowledged in the chatter of middle class dinner parties in Britain that good schools push up house prices. Stories of anxious parents buying or renting at inflated prices in the catchment areas of well-regarded schools are commonplace. But before CEP's research on this issue began more than a decade ago, there was almost no British evidence to back up these anecdotes.

In a series of widely quoted studies, CEP researchers have been at the forefront of efforts to bring rigorous evidence on the scale of these effects into the public domain. Thanks to this work, the link between schools and house prices is now an established fact. What's more, this finding has a significant influence on both education policy – including

measures to improve poorer children's access to good schools – and private sector behaviour – for example, the way that estate agents present property details.

### What's a good school worth?

So how much are people prepared to pay for good state schools? It turns out that the amounts are substantial. The most recent CEP research for England shows that a primary school one standard deviation above the average in terms of the performance of its pupils in key stage 2 tests (at age 11) attracts a house price premium of around 3%. This means that a school right at the top of the league tables attracts a premium of around 12% relative to one at the bottom. At the time of the study in 2006, this was equivalent to £21,000 (Gibbons et al, 2012).

A similar picture emerges for Paris, where in 2004, the best schools attracted a premium of up to €17,500 (Fack and Grenet, 2010). And this is not just a European story: countless studies from the United States and elsewhere produce comparable results, as shown in our extensive surveys of the research evidence (for example, Black and Machin, 2010; Machin, 2011). In fact, a link between better schools and higher house prices has emerged as one of the most stable empirical regularities, with studies worldwide reporting effects of a similar order of magnitude.

These numbers make a great deal of sense in terms of investment in children's future labour market skills. The potential earnings benefits in later life from a good state primary education outstrip the costs of buying a house near a good school.

### Why this matters for policy

While on the surface it might look like a trite research question, establishing the link between schools and housing costs is of much more profound importance than just informing parents' school choices. Education economists are interested in the question because they want to learn about how much people value school quality and because they want to understand which dimensions of school quality matter most to parents.

Answers to the question are also crucial for guiding public policy and deciding how to spend public money in ways that generate the greatest public benefit. House prices help here because their geographical patterns trace out the quality and value placed by society on a wide range of public and environmental amenities, including schools.

The influence of school quality on house prices also feeds back into school admissions – the so-called 'selection by mortgage' of the richest and brightest children into the best schools. This process reinforces school segregation and inequalities in performance and achievement, and reduces social mobility across the generations. The problem is rooted in the fact that places are usually offered first to children who live nearest to a school.

Faced with strong evidence on house price effects and in an effort to give poorer children the opportunity to enrol in high performing schools, recent policy has tried to loosen the link between where children live and the schools they attend. This thinking underlies the use of lotteries and banding for allocating places in popular schools, most famously in Brighton.

The link between schools and house prices also sheds light on the general shortage of what parents perceive as high quality schools, influencing the policy measures to extend competition, choice and the quality and diversity in provision through the academy and 'free school' programmes.

Outside the field of education, urban economists, estate agents and planners are also interested in school/house price patterns because they provide information about how housing markets operate, the factors causing the segregation of rich and poor into different neighbourhoods and the more general spatial structure of cities.

A link between better schools and higher house prices is one of the most stable empirical regularities worldwide



## The nitty gritty: how to work it out

Despite the apparent simplicity of the research question, getting good answers about the link between school quality and local house prices turns out to be far from straightforward. The line of inquiry comes from a long tradition in the US research literature, developed from work on valuing air quality and other environmental amenities where there is no explicit market price.

The theory is intuitively easy to understand. Spending on housing is spending on a bundle of goods: structural quality, access to transport, green space, shops, safety from crime, views, environment and so on, alongside school quality. The market price of a house therefore reflects the availability of these attributes and amenities, and buyers' willingness to give up other forms of consumption to pay for them. The premium that buyers pay for a house close to a good school relative to an equivalent house near a bad school (holding other factors constant) intuitively tells us something about the willingness to pay for good schooling.

But distilling these school effects from data on house prices and school quality presents a big challenge. The words 'holding other factors constant' encapsulate the problem. Ideally, we would like to compare houses that are identical in all respects apart from the quality of the schools to which they offer access, so as to work out the direct 'causal' effect that schools have on prices.

Researchers have developed increasingly sophisticated techniques to try to do this. The basic procedure is to take the price of a house and its associated local school quality, and compare them with the prices of similar neighbouring houses that offer access to a different set of schools. The assumption here is that the close neighbours provide a set of (almost) identical 'twins' with which comparisons can be made.

This method is used in the first CEP paper on the topic (Gibbons and Machin, 2003), in extensions with more detailed housing data (Gibbons and Machin, 2006) and in work using more advanced techniques for assigning schools to houses in the data (Gibbons et al, 2012).

These analyses also refined the idea by comparing closely neighbouring houses on either side of the boundaries of school catchment areas, an idea borrowed from an analysis of the US city of Boston (Black, 1999). The reasoning is that houses that are next to each other but in different catchment areas are effectively identical apart from a sharp difference in

the quality of the school that a child gets to attend.

In Britain, school catchment areas are rarely rigidly defined, so we have used the boundaries of local education authorities (LEAs), which acted as catchment area boundaries for primary schools. Few primary school age children attend schools in LEAs outside that of their home, so neighbours in adjacent LEAs can face very different quality schools.

In this research, we effectively show that if you live on an LEA boundary on the side of a good school, you will be paying more than your neighbour across the street who lives in a different LEA with less successful schools. The same idea is applied in the study of Paris, where catchment areas are set out explicitly.

## What matters to parents about schools?

Although these studies have generated rigorous evidence on the school quality premium, just knowing by how much school quality pushes up house prices isn't really enough. There are many other important and more nuanced questions, to which answers are needed.

Which aspects of schools drive up house prices? Is it headline performance indicators, the peers that a child can expect at school, the quality of the teaching, the leadership, the buildings and infrastructure, the expenditure per pupil or something else? Does school quality matter more in some parts of town than others? And does the availability of private schooling as an outside option set a cap on the house price premium?

A big question is what parents are actually paying for, especially whether they are just looking for a school that boosts their child's achievement or something more subtle about the school environment. We show that the answer is a little of both (Gibbons et al, 2012).

Educational researchers typically measure the effectiveness of school teaching through the 'value-added' a school provides – that is, how much a child's test scores improve after a number of years at the school relative to other children. Our research pitches this measure in a race against characteristics of the school intake – such as their early achievements, ethnicity and poverty – to see which wins out as a factor driving local house prices.

The potential  
earnings  
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a house near a  
good school



The result is too close to call. Value-added is always crucial, but prior ability of the school intake and associated socio-demographic characteristics – particularly entitlement to free meals – are also strong drivers. It looks like people value schools not only for what they can do to raise their child's achievements but also for the quality of their intake. This is not that surprising when you consider that the main public source of information on school quality is the league tables – and the headline indicators are responsive to both intake and teaching effectiveness.

Other evidence also finds that objective indicators of school quality influence demand for secondary school places. For example, we show that the proportion of children reporting that they are happy has no effect on house prices, while intake quality and value-added again have a large influence (Gibbons and Silva, 2011).

### Is it worth going private?

Once we know that the quality of state schools raises house prices, an obvious question is how these costs compare with the costs of a private education. Our evidence shows that paying for state education in England through housing is still a cheaper option than paying for private education. But the gap is not as big as you might think.

Our calculations imply that getting a child into a state primary that delivers in the top 10% of achievement (assuming you could find such a school) would set you back about £26,000 at 2006 prices. That's about £3,000 a year if you decided to pay that amount off over the seven years of primary schooling on a 5% mortgage interest rate (Gibbons et al, 2012). By comparison, seven years of private schooling at the time would have cost an average of £3,800 per term or nearly £80,000. So state primary schools still look like a good deal for parents.

The availability of private schools as an outside option also comes into play in determining the geographical patterns of the school/house price premium. This issue is specifically addressed in the study of Paris, where private schooling takes a much greater share than in England.

The evidence from Paris shows that penetration of the local market by private schools noticeably dampens the effects of state schools on house prices. Presumably

## Parents value schools not only for what they can do to raise their child's achievements but also for the quality of their intake

this is because home-buyers in these areas are much less interested in state school quality. Ironically, local private schools – institutions normally accused of increasing educational inequalities – could help alleviate inequality in access to state schools, by reducing the demand pressures on top performing state schools.

### Summing up

Dinner party chatter about schools and house prices turns out to be a fruitful avenue of research. It is possible to quantify the link – and the link matters for educational policy. 'Pricing in' public goods through housing is one of the most fruitful and still under-exploited areas in applied economics, and the wealth of new data on house prices and local outcomes (such as crime) will make this a growing area in the future.

## Paying for state education in England through housing is still a cheaper option than paying for private education

**Steve Gibbons** is research director of the Spatial Economics Research Centre (SERC), a reader in economic geography at LSE and a research associate in CEP's education and skills programme.

### Further reading

Sandra Black (1999) 'Do Better Schools Matter? Parental Valuation of Elementary Education', *Quarterly Journal of Economics* 114: 578-99.

Sandra Black and Stephen Machin (2010) 'Housing Valuations of School Performance', in *Handbook of the Economics of Education*, Volume 3 edited by Eric Hanushek, Stephen Machin and Ludger Woessmann, North Holland.

Gabrielle Fack and Julien Grenet (2010) 'When Do Better Schools Raise Housing Prices? Evidence from Paris Public and Private Schools', *Journal of Public Economics* 94(1-2): 59-77 (earlier version available here: <http://cee.lse.ac.uk/ceedps/ceedp119.pdf>).

Stephen Gibbons and Stephen Machin (2003) 'Valuing English Primary Schools', *Journal of Urban Economics* 53: 197-219 (earlier version available here: <http://cee.lse.ac.uk/ceedps/ceedp15.pdf>).

Stephen Gibbons and Stephen Machin (2006) 'Paying for Primary Schools: Admission Constraints, School Popularity or Congestion', *Economic Journal* 116: C77-92 (earlier version available here: <http://cee.lse.ac.uk/ceedps/ceedp42.pdf>).

Stephen Gibbons, Stephen Machin and Olmo Silva (2012) 'Valuing School Quality Using Boundary Discontinuities', Centre for the Economics of Education Discussion Paper No. 132 (<http://cee.lse.ac.uk/ceedps/ceedp132.pdf>).

Stephen Gibbons and Olmo Silva (2011) 'School Quality, Child Wellbeing and Parents' Satisfaction', *Economics of Education Review* 30(2): 312-31.

Stephen Machin (2011) 'Houses and Schools: Valuation of School Quality through the Housing Market', CEP Occasional Paper No. 29 (<http://cep.lse.ac.uk/pubs/download/occasional/op029.pdf>).



Industrialised countries today face serious risks – for their financial sectors, for their public finances and for their growth prospects. **Peter Boone** and **Simon Johnson** explain how this has happened and why there are more and worse crises to come.

# The doomsday cycle turns: WHO'S NEXT?





**T**here is a common problem underlying the economic troubles of Europe, Japan and the United States: the symbiotic relationship between politicians who heed narrow interests and the growth of a financial sector that has become increasingly opaque. Bailouts have encouraged reckless behaviour in the financial sector, which builds up further risks – and will lead to another round of shocks, collapses and bailouts.

As we described in a previous issue of *CentrePiece*, this is the 'doomsday cycle' (Boone and Johnson, 2009/10). The cycle turned in 2007-08 and was most dramatically manifest in the weeks and months that followed the fall of Lehman Brothers, the collapse of Iceland's banks and the botched 'rescue' of the big three Irish financial institutions.

The consequences have included sovereign debt restructuring by Greece, as well as continuing problems – and lending programmes by the International Monetary Fund (IMF) and the European Union – for Greece, Ireland and Portugal. Italy, Spain and other parts of the euro area remain under intense pressure.

Yet in some circles, there is a sense that the countries of the euro area have put the worst of their problems behind them. Following a string of summits, it is argued, Europe is now more decisively on the path to a unified financial system backed by what will become the substance of a fiscal union.

The doomsday cycle is indeed turning – and problems are undoubtedly heading towards Japan and the United States: the

current level of complacency among policy-makers in those countries is alarming. But the next turn of the global cycle looks likely to hit Europe again and probably harder than before.

The continental European financial system is in big trouble: budgets are unsustainable and growth is nowhere on the horizon. The costs of bailouts are rising – and the coming scale of the problem is likely to undermine political support for the euro area itself.

### The structure of the doomsday cycle

In the 1980s and 1990s, deep economic crises occurred primarily in middle- and low-income countries. These crises would grab the world's attention from time to time, but all proved to have little lasting effect beyond the countries most directly affected. In some cases, the experience of

a crisis was actually cathartic and helped clear the way for stronger growth.

In contrast, the crises we should now fear are in relatively rich countries with the world's 'most developed' financial infrastructure. These crises have the potential to reduce growth profoundly around the world.

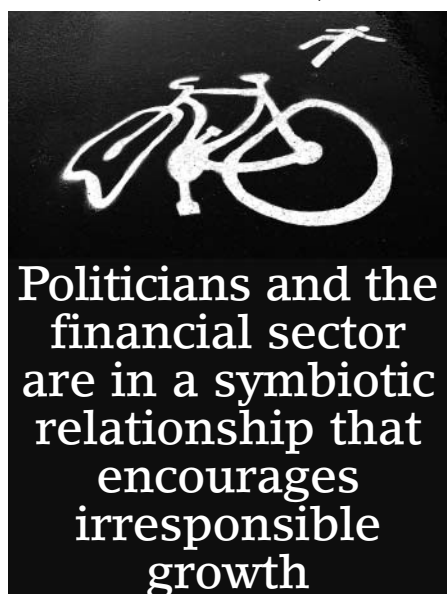
The problem is that the modern financial infrastructure makes it possible to borrow a great deal relative to the size of an economy – and far more than is sustainable relative to growth prospects. The expectation of bailouts has become built into the system, in terms of government and central bank support. But this expectation is also faulty because, at times, the claims on the system are more than can ultimately be paid.

For politicians, this is a great opportunity, enabling them to buy favour and win re-election. The problems will become apparent, they calculate, on someone else's watch. So repeated bailouts have become the expectation not the exception.

For bankers and financiers of all kinds, this is easy money and great fortune – literally. The complexity and scale of modern finance make it easy to hide what is going on. The regulated financial sector has little interest in speaking truth to authority: that would just undercut their business.

Banks that are 'too big to fail' benefit from giant, hidden and very dangerous government subsidies. Yet despite repeated failures, many top officials pretend that 'the market' or 'smart regulators' can take care of this problem.

For the broader public, none of this is



clear – until it is too late. The issues are abstract and lack the personal drama that grabs headlines. The policy community does not understand the issues or becomes complicit in the schemes of politicians and big banks. The true costs of bailouts are disguised and not broadly understood. Millions of jobs are lost, lives ruined, fiscal balance sheets damaged – and for what exactly?

Over the past four centuries, financial development has strongly supported economic development. The market-based creation of new institutions and products encouraged savings by a broad cross-section of society, allowing capital to flow into more productive uses. But in recent decades, parts of our financial development have gone badly off-track – becoming much more a ‘rent-seeking’ mechanism that draws support from politicians because it facilitates irresponsible public policy.

The question is: who will be hurt by this structure and in what order? There are three prominent candidates: Japan, the United States and the euro area.

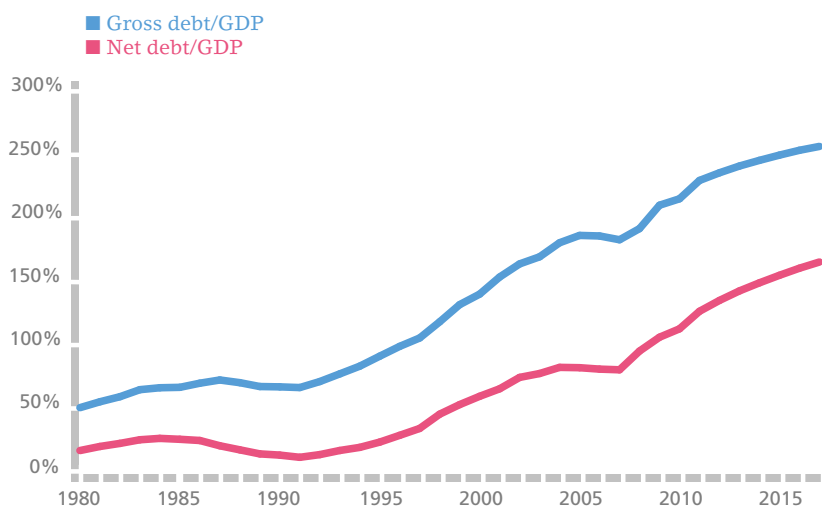
### Japan’s long march to collapse

To understand the pervasive nature of modern financial instabilities, start with the least discussed reckless situation in a major country today. Figure 1 shows the path of Japan’s ratio of debt to GDP over the last 30 years, including IMF forecasts to 2016.

Japan has a rapidly ageing population. The average Japanese woman today has 1.39 children, far fewer than is needed to replace the elderly. This means that the total population is set to decline by 26% by 2050. Having peaked in the mid-1990s, the country’s working age population will decline by a staggering 40% between 1995 and 2050. Naturally, many of the



Figure 1:  
Japan gross and net general government debt as a percentage of GDP



Source: IMF



ageing Japanese have been saving for their retirement for decades. They deposit those funds in banks, buy government bonds, hold cash savings or buy Japanese equities.

With an ageing population and slower growth, the broad outlines of responsible policy are straightforward. Japan should become a big investor in countries with younger populations, providing the capital investment needed to generate growth. Those countries can then return the savings to the Japanese as they retire. Singapore's government does just that via one of the world's largest investment funds.

Instead, for the last two decades, Japan's government has been running large deficits, borrowing and then spending the savings of the young. When the elderly finally demand their savings

back in the form of pensions, the government will need to reduce its budget deficit of 8% of GDP and start running a sizeable budget surplus. Unless there is a sudden burst of romance and fertility, there will be far fewer Japanese taxpayers in the future to pay this debt.

The government has not been willing to raise taxes in a timely manner to match its spending. The latest agreement is for a modest (5%) increase in the retail sales tax, which would only be fully implemented in 2015. Why would it do so in the future when the burden on the remaining workers will need to be ever larger?

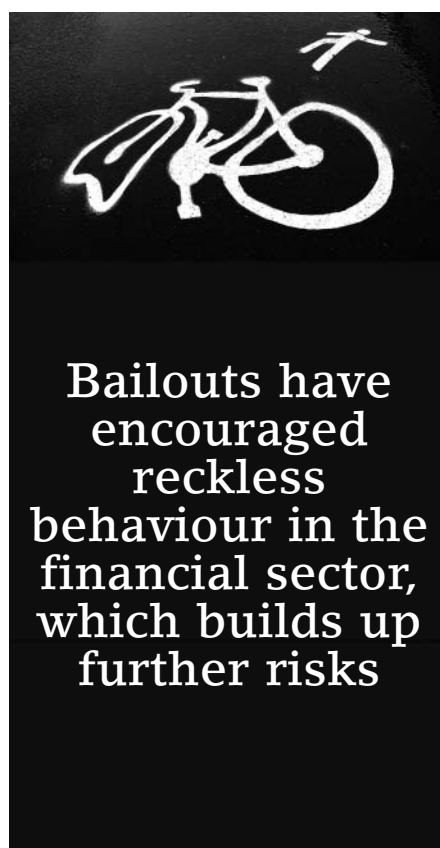
Japan is saved from immediate pressure by the fact that about 95% of its government debt is held by domestic residents. As long as these investors are satisfied with very low – or perhaps negative – real rates, this situation can continue.

But sooner or later, Japan's dreadful fiscal mathematics will catch up with the government. There is no sign yet of a broad loss of confidence, but major shifts in market sentiment are not typically signalled in advance.

### **America's reckless private finance**

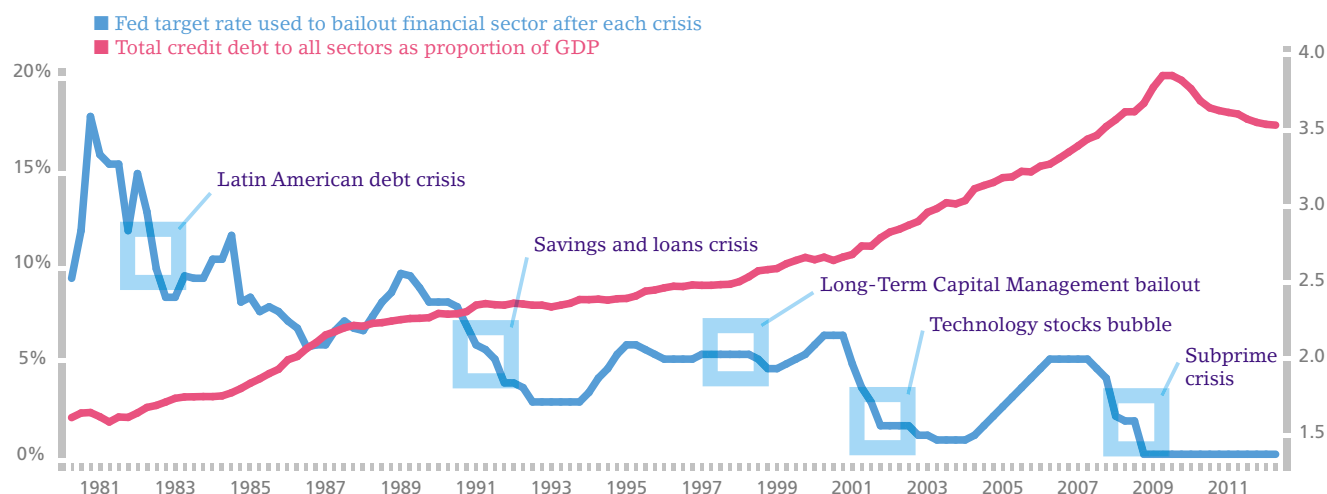
In the United States, the symptoms are different. Figure 2 illustrates the US version of the doomsday cycle: the rise of total credit as a fraction of national income. Major players in the financial system have become too big to be allowed to fail – and consequently receive large subsidies.

The latest crisis has led to the largest monetary and fiscal bailouts on record. The Congressional Budget Office estimates that the final fiscal impact of the crisis of 2007-08 will end up increasing debt relative to GDP by about 50 percentage



**Bailouts have encouraged reckless behaviour in the financial sector, which builds up further risks**

Figure 2:  
US ratio of credit to GDP and Fed target rate



Source: IMF

points. This is the second largest debt shock in US history: measured in this way, only the Second World War cost more. (For more detail, see Johnson and Kwak, 2012.)

The alliance that leads to unsustainable finance here is simple: the US financial system earns large 'rents' (excess returns to labour and capital) from the implicit subsidies offered by taxpayers. These rents finance a massive system of lobbyists and campaign donations that ensures 'pro-bailout' politicians win elections regularly.

Each time the United States has a crisis, politicians and technocrats admit their errors and buttress regulators to ensure that 'it never happens again'. Yet still it happens, again and again. We are now on our third round of the so-called Basel international rules for banks, with the architects of each new reform admonishing the previous architects for their mistakes. There's no doubt that the United States will someday soon be correcting Basel 3 and moving on to Basel 4, 5, 6 and more.

The problem that the country faces is that with each crisis, the financial risks are getting larger. If continued in this manner, bailing out the system will eventually be unaffordable. When the United States finally runs out of enough savers to buy the bonds needed to bail out the system, it will suffer the ultimate collapse. (For more detail, see Schularick and Taylor, 2012.)

Roughly half of all US federal debt is currently held by non-residents. So US fiscal policy remains viable only as long as the dollar is seen as the ultimate safe haven for investors. But what is the competition? Japan is not appealing today as a haven and it is unlikely to become more appealing in the near term. A great deal of the prospects for the US budget and growth therefore rest on what happens in the euro area.

### The euro area: flawed dreams

There is no sign that the euro area will emerge from crisis any time soon.

The incentive structure of the euro system ensured that each country's financial sector clamoured to join it. The key feature that made it so attractive was the liquidity window at the European Central Bank (ECB).

For smaller countries, the ECB is a modern day Rumpelstiltskin. Rather than spinning straw into gold, the ECB converts unattractive government and bank-issued securities into highly liquid 'collateral' that can be readily swapped for cash from the ECB. This feature instantly made sovereign and bank bonds very attractive debt instruments. Knowing that the borrowers had essentially unlimited access to liquidity from the ECB, investors became willing lenders at low interest rates to all banks in the euro area.

Given such attractive features, it is easy to understand why 17 countries

mastered the political debate to join the euro system. It is also easy to understand how the system got abused and why it will be so difficult ever to make it 'safe'. If the Japanese can't control their public finances and if the United States can't control its too-big-to-fail banks, the added complexity of merging 17 regulators and 17 national governments into a system where someone else can be made responsible for bailing out the intransigents seems a financial and regulatory nightmare.

Such a system is sure to be crisis-prone. The Federal Reserve and the federal



**The next turn  
of the global  
cycle looks likely  
to hit Europe  
again – and  
probably harder  
than before**





This system poses great dangers to global financial stability. The euro area faces myriad problems, including insufficient bank capital, high levels of private and public debt and the chronic inability of some member countries to grow.

It is now common to hear policy-makers blackmailing populations: unless the euro area survives, tragedy will result. And it is true that tragedy will result: we only need to look at the rise of complex derivatives and the dangers they pose were the euro area to dismantle. (For a broader discussion of Europe's problems, see Boone and Johnson, 2011 and 2012.)

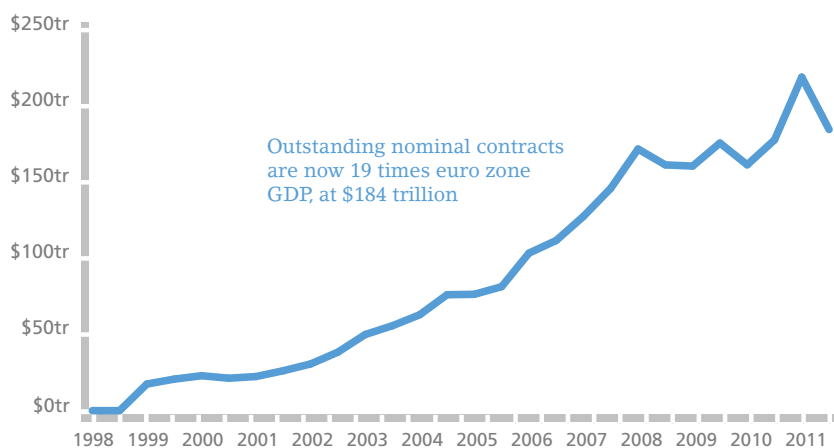
Figure 3 illustrates the growth of euro-denominated interest rate derivatives, the notional value of which now totals more than 10 times the GDP of the euro area. Regulators commonly use net figures when they consider ultimate risk for banks and this makes sense under the usual circumstances of bankruptcy. But when a currency area breaks up, the practice of netting off contracts needs to change dramatically and banks will be facing far more risks than regulators and risk officers currently report.

For example, if a German bank has a contract with a French bank and an opposite identical contract with a German pension fund, it can net those two contracts and report the ultimate risk as zero. (Of course there is counterparty risk, but under standard agreements,

government attempt to provide bailouts when there is trouble in the United States. But in Europe, the bailouts are only partial. No country has a 'lender of last resort' like the Federal Reserve or the Bank of Japan – so markets are now learning that large risk premia are needed to reflect default risk in troubled countries.

Flexible exchange rates would undoubtedly make it easier to manage these crises. Devaluations instantly reduce wages and raise countries' competitiveness. If Greece had managed a large devaluation, it could probably have avoided much of the unemployment and social turmoil we see today. Instead, each troubled country in Europe now suffers when having to force down wages and prices during adjustment.

Figure 3:  
Outstanding interest rate swaps denominated in euros  
(\$ trillion nominal value)





derivatives are cleared instantly at liquidation so the counterparty risks can be netted).

But if investors start to believe that there will be new currencies in each country, then the two contracts in this example are no longer offsetting so they must not be netted. It is reasonable to think that after any demise of the euro, the contracts between two German counterparties will be converted into deutsche marks, while contracts with international partners will be disputed or maintained in a euro proxy.

As a result, risk officers at banks should understand that if the euro area breaks up, all banks in Europe face enormous and unaccountable currency risk. Each of their 'euro' assets and liabilities needs to be examined to understand into which currency it would be converted. (For more discussion on redenomination issues, see Nordvig and Firoozye, 2012.)

### The threat of future crises

The tragedy of the euro area appears unavoidable, but it reflects far greater risks that will spread to Japan, the United States and other advanced economies.

Through our financial systems, we have created enormous, complex financial

structures that can inflict tragic consequences with failure and yet are inherently difficult to regulate and control. We are at the behest of our politicians and financial sectors to prevent them from creating dangers. Yet around the world, our political and financial systems have aligned to build these dangers rather than suppress them.

The continuing crisis in the euro area merely buys times for Japan and the United States. Investors are seeking refuge in these two countries only because the dangers are most imminent in the euro area. Will these countries take this time to fix their underlying fiscal and financial problems? That seems unlikely.

The lesson from all these troubles is clear: the relatively recent rise of the institutions of complex financial markets, around the world, has permitted the growth of large, unsustainable finance. We rely on our political systems to check these dangers, but instead the politicians naturally develop symbiotic relationships that encourage irresponsible growth.

The nature of 'irresponsible growth' is different in each country and region – but it is similarly unsustainable and it is still growing. There are more crises to come and they are likely to be worse than the last one.

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They are co-founders of *The Baseline Scenario*, a leading economics blog (<http://baselinescenario.com>).

### Further reading

Peter Boone and Simon Johnson (2009/10) 'The Doomsday Cycle', *CentrePiece* 14:3 (<http://cep.lse.ac.uk/pubs/download/cp300.pdf>).

Peter Boone and Simon Johnson (2011) 'Europe on the Brink', Peterson Institute for International Economics (<http://www.iie.com/publications/pb/pb11-13.pdf>).

Peter Boone and Simon Johnson (2012) 'The European Crisis Deepens', Peterson Institute for International Economics (<http://www.iie.com/publications/pb/pb12-4.pdf>).

Jens Nordvig and Nick Firoozye (2012) 'Planning for an Orderly Break-up of the European Monetary Union', submission to the Wolfson Economics Prize 2012, Nomura Securities.

Simon Johnson and James Kwak (2012) *White House Burning: The Founding Fathers, Our National Debt and Why It Matters To You*, Pantheon.

Moritz Schularick and Alan Taylor (2012) 'Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008', *American Economic Review* 102(2): 1029-61.



The continuing  
crisis in the  
euro area merely  
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United States

What impact did media reporting of the near trebling of tuition fees have on school students' understanding of the costs and benefits of university? A CEP experiment run by **Sandra McNally** and colleagues sheds light on this question as well as on broader issues about the importance of clear information about the value of higher education.



# Student awareness of the costs and benefits of higher education

**A**pplications for university places are down for the 2012/13 academic year, but it is too early to assess the impact of the near trebling of tuition fees on demand for higher education or on socio-economic inequality. In recent research, we have aimed to find out what school students know about the costs and benefits of going to university – and what would be the impact on their knowledge and aspirations of an ‘information campaign’.

We invited all secondary schools in London to take part in the study. Of these, 54 schools participated in the main evaluation, which took place during the 2010/11 academic year. The participating

schools were above average in terms of GCSE performance and relatively less deprived as measured by the percentage of students eligible for free school meals.

At each school, all students in year 10 (14/15 year olds) completed a 40-minute survey (under exam conditions). Eight to 12 weeks later, they completed a very similar survey. In between the two periods, some schools were given an information package about the costs and benefits of staying in education, whereas other schools were given the package after their students had completed the second survey.

The focus of the survey was on the costs and benefits of staying in full-time education, with a particular emphasis on

university. The fieldwork took place at the time that the hike in fees was announced, so the results show not only the impact of the information campaign but also the short-term impact of media reporting of the fee increase. We measure media reporting as the number of articles about fees that appeared on the BBC website between January 2010 and the survey dates (which varied across the schools so that students had different levels of exposure to the media).

## The information experiment

Schools were randomly assigned to two groups: ‘treatment’ schools, which got the information package between the two surveys; and ‘control’ schools, which got it



later. The purpose was to test whether students in treatment schools showed any change in knowledge and aspirations compared with students in control schools. We chose Year 10 because these students do their GCSE exams one year later (at the end of Year 11) and are already making important decisions about what to do subsequently.

The central component of the information package was a password-protected website ('Whats4me'), designed to convey simple information about the costs and benefits of staying in education – including the likely improvement in earnings capacity and employment prospects, and information about fees, loans and maintenance grants.

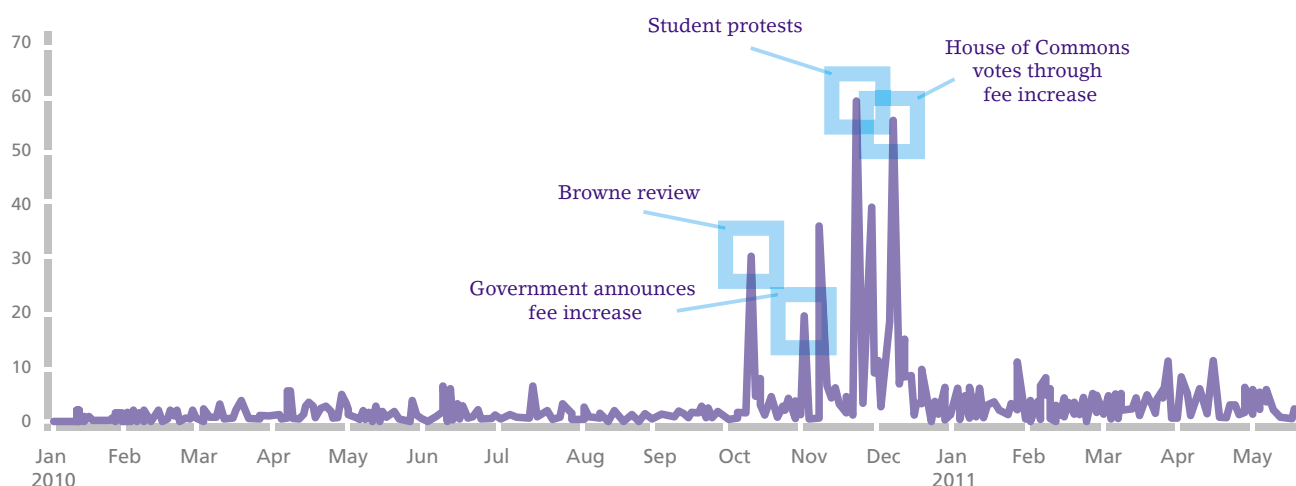
The website was updated with any

announcements about university finance as they occurred. By chance, the project coincided with major changes. First, the independent review of higher education and student finance led by Lord Browne of Madingley reported in October 2010. The most controversial of its recommendations – that the cap on fees, which had risen to £3,300 per year at the time of the review, should be removed altogether – received a great deal of press attention.

The government response came shortly afterwards, in November 2010, with the announcement that fees would not be unlimited but capped at £9,000 per year, and that government funding for certain subjects would be removed altogether so that they would be funded entirely by fees. Again, this announcement

There are substantial gaps in school students' knowledge of very basic facts about the costs and benefits of staying in education

Figure 1:  
BBC reports on tuition fees



## Misperceptions are easily corrected: a light-touch information campaign can have sizeable effects on student attitudes

received a great deal of press attention, with much coverage focused on the potentially negative effects of the fee increases on student participation.

Media reporting is illustrated in Figure 1, which counts the number of articles on the BBC website that mentioned fees between January 2010 and the time of our second survey. The fee increases were met with a great degree of public anger, including a protest by tens of thousands of students and lecturers in November 2010. Nevertheless, the rise in fees was successfully passed through parliament the following month.

The fortuitous timing of our project made it possible to test the impact on students' knowledge and aspirations of both our information campaign and media reporting. One crucial difference between our campaign and media reporting is that the latter emphasised the huge rise in fees, without always mentioning the favourable terms of loans and the availability of grants (see Table 1).

There are three main aspects of our results:

- The poor state of knowledge in participating schools.
- The effects of our information campaign and media reporting, which often work in opposite directions.
- The difference in how information from both sources affected students from different backgrounds. To illustrate this, we report differences between students in independent and selective state schools and students in comprehensive schools.

We also report differences between students eligible for free school meals and other students in state schools.

### The state of school students' knowledge

The first column of Table 2 shows the percentage of students in the first or 'baseline' survey who agreed with statements in five categories: knowledge of student finance; perceived importance of financial constraint; opportunity cost; knowledge about the benefits of staying in education; and future intentions.

For example, answers to the 'knowledge' questions (of student finance and the benefits of staying in education) indicate that fewer than half of students knew that fees are paid after university and once they have a job. Similarly, fewer than half regarded student loans as a 'cheaper/better way to borrow money than other types of borrowing'.

While most students realised that staying longer in education increases the probability of finding a job, about one in five did not know this. Furthermore, many

students did not realise that expected earnings vary depending on the subject they study and the university they attend. This matters because ill-informed students might not take their education seriously enough.

Previous research has shown that what determines whether students go to university is largely set before they finish their compulsory education (at the end of Year 11). So we should not be waiting until exams have been sat and subject choices made before ensuring that students have the correct information on which to base their future decisions. The fact that careers information classes are not specifically resourced or required by government does not help create the right incentives for schools.

### Effects of the information experiment and media reporting

The second and third columns of Table 2 show the effects of the information experiment and media reporting. These are estimated by comparing pupils in the

Table 1:

### Basic facts about financing university education

#### Tuition fees

Universities are allowed to charge up to £9,000 per year. Tuition fees are deferred, meaning that students do not have to pay their fees upfront, but instead can borrow the full amount from the government under generous terms.

#### Maintenance loans

These loans are means-tested, according to the parental income of the student. In 2012/13, the maximum student loan available will be £5,500 per year, and the minimum amount, available to all students regardless of parental income, will be £3,575 per year. Student maintenance loans are repaid in the same way as tuition fee loans.

#### Maintenance grants

Some students are entitled to maintenance grants, which do not have to be repaid. Students whose parental income is less than £25,000 per year are entitled to £3,250 per year. As parental incomes rise, the grant entitlement is reduced, so that students whose parental income is over £42,600 per year receive nothing.

#### Repayment of fee and maintenance loans

Students do not have to repay their loans until they have graduated university and are earning £21,000 per year. Then, they repay 9% of their earnings over this amount, which will usually be deducted from their earnings automatically in a similar way to income tax. A graduate earning £25,000 would repay £360 per year. Repayment continues for 30 years or until the graduate has repaid the loan in its entirety. Interest is added onto the loan each year, on a means tested-basis. Graduates earning £21,000 or less per year will incur no interest, while graduates earning £41,000 per year will incur interest of 3% per year; interest is tapered between 0% and 3% for those earning between £21,000 and £41,000.

Table 2:  
Effects of the information campaign and media reporting

	Mean at baseline	Effects of the information experiment	Effects of media reporting
<b>Knowledge of student finance</b>			
Know that university fees are paid after university and have a job	46%	<b>+5.8%</b>	<b>+9%</b>
'Student loans are a cheaper/better way to borrow money than other types of borrowing' Agree	48.6%	<b>+7.6%</b>	0%
<b>Perceived importance of financial constraint</b>			
Would the financial cost of staying in education prevent you from staying on in education after Year 11? Yes	11.7%	<b>-3.9%</b>	<b>+2.4%</b>
Would the financial aspect of going to university make you think of not applying? Yes	25.7%	<b>-5%</b>	<b>+6.5%</b>
'Going to university is too expensive for me and my family' Yes	22.2%	-2.2%	<b>+6.6%</b>
<b>Opportunity cost</b>			
'Going to university would mean waiting too long before I could earn a full-time wage' Agree	24.3%	<b>-3%</b>	+0.02%
<b>Knowledge about the benefits of staying in education</b>			
Better chance of getting a job if stays on to 18 Agree	79.8%	+2.3%	-0.6%
Better chance of getting a job if goes to university (compared to leaving at 18) Agree	80.4%	<b>+3.3%</b>	+1.6%
Will earn about the same no matter what university subject I study Agree/don't know	42.7%	<b>-5.2%</b>	+1.9%
Will earn about the same no matter what university I go to Agree/don't know	53.4%	<b>-5.6%</b>	+2.7%
<b>Future intentions</b>			
Plan to stay on in full-time education after age 16	77.9%	<b>+2.9%</b>	-2.1%
Think it is very or fairly likely that they will ever apply to go to university to do a degree	87.4%	-0.3%	-1.7%
Think it is very likely that they will ever apply to university to do a degree	59%	+0.6%	<b>-4%</b>

**Notes:** The data cover 54 schools and over 12,000 students.  
The numbers in bold are statistically significant at 5% level.

treatment and control schools and taking account of some baseline characteristics.

The information experiment and media reporting worked in the same direction for knowledge of when fees are paid, increasing the probability of correctly understanding the basics of when fees are paid by 5.8 and 9 percentage points respectively (from a baseline of 46% of students, who knew the right answer in the first survey).

Moreover, our information experiment increased the probability of agreeing that 'student loans are a cheaper/better way to borrow money than other types of borrowing' by 7.6 percentage points (from a baseline of 48.6%) while media reporting had no effect.

For the perceived importance of

financial constraints on staying in education, the information experiment and media reporting had opposite effects. Our information campaign led students to think that staying in education would be affordable (loan conditions and grants were carefully explained) whereas media reporting led students to think that going to university would be 'too expensive'.

This difference is evident in all three questions on perceived financial constraints. The information experiment reduced negative perceptions of affordability across the board – for example, the proportion of students put off by financial aspects of university fell by five percentage points.

Media reporting, on the other hand, increased the negative perceptions of

affordability in all cases. For example, the proportion of students put off by financial aspects of university increased by 6.5 percentage points. This is a sizeable impact when put alongside the baseline level of agreement of 25.7%.

The information experiment had a downward effect on the perceived opportunity cost of going to university while media reporting had virtually no impact on responses to this question.

On knowledge about the benefits of staying in education, media reporting had no effect that is statistically different from zero. But the information experiment increased the probability that students perceive that they have a better chance of getting a job if they stay in education to the age of 18 or if they go to university.



## Students at independent schools are much less likely to feel financially constrained than students at comprehensive schools



At the same time, the information experiment reduced the probability of agreeing with incorrect statements about choice of subject and university by 5.2 and 5.6 percentage points respectively (from baseline values of 42.7% and 53.4%).

Finally, the information experiment had an impact on whether students plan to stay in education – but it had virtually no impact on university intentions. But the effect of media reporting was to reduce the probability of stating ‘it is very likely I will ever apply to university to do a degree’ by four percentage points. It is worth noting that future intentions about staying in education are much higher than what is likely to transpire in reality, as has been shown in the Longitudinal Survey of Young People in England.

Our results indicate that media reporting and a fairly ‘light-touch’ information campaign have quite sizeable effects on student attitudes – at least in the short term. Of course, this does not necessarily translate into behaviour. But there is certainly a strong correlation between students’ attitudes and their subsequent behaviour.

On the negative side, the experiment shows substantial gaps in student knowledge about very basic facts about the costs and benefits of staying in education. More positively, it shows that such gaps can be easily filled – and in a cost-effective way.

If there is a chain of causation between student beliefs about the affordability of higher education and how hard they work to ensure they can access opportunities, then informing students

properly might also be a way of improving performance at GCSE.

### Different effects by socio-economic group

To explore differences across socio-economic groups, we focus on the survey questions about the perceived importance of financial constraints in making decisions about education. We look at how students reacted to the information experiment and media reporting according to whether they attend independent and selective state schools or comprehensive schools, and whether they are eligible for free school meals.

Table 3a shows how students reacted according to school type. The first column shows that there are very large gaps at baseline. Students at independent and

Table 3a:

### Effects: independent and selective state schools compared with comprehensive schools

	Mean at baseline	Effects of the information experiment	Effects of media reporting
<b>Independent and selective state schools (18 schools)</b>			
<b>Perceived importance of financial constraint</b>			
Would the financial cost of staying in education prevent you from staying on in education after Year 11? Yes	5.5%	0.3%	+1.7%
Would the financial aspect of going to university make you think of not applying? Yes	18%	-4.5%	+2.3%
‘Going to university is too expensive for me and my family’ Yes	13.1%	-1.1%	+2.2%
<b>Comprehensive schools (36 schools)</b>			
<b>Perceived importance of financial constraint</b>			
Would the financial cost of staying in education prevent you from staying on in education after Year 11? Yes	13.6%	-5%	+3.8%
Would the financial aspect of going to university make you think of not applying? Yes	28.1%	-5.2%	+5.6%
‘Going to university is too expensive for me and my family’ Yes	25%	-2.2%	+6.6%

## Perceptions of the affordability of higher education have widened between different socio-economic groups

selective state schools were much less likely to feel financially constrained than students at comprehensive schools: 5.5% of students in independent and selective state schools were put off staying in education by the cost compared with 13.6% in comprehensive schools.

For higher education, 13-18% of students in independent and selective state schools were put off by the cost (depending on how the question is asked) compared with 25-28% in comprehensive schools. The impact of the information experiment was stronger in comprehensive schools for these questions, reducing the probability of feeling constrained by finances by around five percentage points.

But the clear difference between school types comes with students' reactions to media reporting. Although the difference is evident for all three questions, it is statistically significant for the statement 'going to university is too expensive for me and my family'. The impact of media reporting was to increase the perception of unaffordability by 2.2 percentage points in independent and selective state schools but by 6.6 percentage points in comprehensive schools.

This gap is also reflected in changes in aspirations to go to university (which are not shown in the table). There was no change in independent and selective state schools but a fall of three percentage points in the number of students in comprehensive schools who think they will ever apply for university.

These attitudes could influence efforts to work hard for GCSE exams a year later and/or actual decisions about staying in education. In this case, it would mean that increases in fees – and how these increases have been reported – widen gaps in participation in higher education between different socio-economic groups.

Table 3b reports effects according to whether or not students in state schools are eligible for free school meals. The differences in the baseline survey are not so striking for the two groups: students eligible for free school meals are a little more likely to say that cost would prevent

them from staying in education post-16 or going to university.

But there is a striking difference in how the two groups respond to media reporting. It greatly increases the extent to which students eligible for free school meals perceive university as unaffordable. When asked 'would the financial aspect of going to university make you think of not applying?', media reporting increases the probability of saying yes by 9.9 percentage points for students eligible for free school meals, whereas it only increases by 3.1 percentage points for other students.

The findings are very similar in response to the statement 'going to university is too expensive for me and my family'. This suggests that the reaction to media reporting was more severe for those from poorer backgrounds, in turn widening the perception gap between different socio-economic groups, even though the changes have been designed to protect students from poor families (through grants). If perceptions translate into behaviour, this would have serious implications for equity and intergenerational mobility.

Of equal interest are the different effects of the information experiment on the two groups. For students eligible for free school meals, our information experiment reduced the probability of saying 'yes' to the question 'would the financial aspect of going to university make you think of not applying' by

Table 3b:

### Effects: students eligible for free school meals compared with other students in state schools

	Mean at baseline	Effects of the information experiment	Effects of media reporting
<b>Eligible for free school meals (744 students)</b>			
<b>Perceived importance of financial constraint</b>			
Would the financial cost of staying in education prevent you from staying on in education after Year 11? Yes	15%	-6.5%	+3.3%
Would the financial aspect of going to university make you think of not applying? Yes	27%	-12.9%	+9.9%
'Going to university is too expensive for me and my family' Yes	26%	-10.4%	+11.4%
<b>Other students in state schools (3,186 students)</b>			
<b>Perceived importance of financial constraint</b>			
Would the financial cost of staying in education prevent you from staying on in education after Year 11? Yes	12%	-2.4%	+2.3%
Would the financial aspect of going to university make you think of not applying? Yes	28%	-1.8%	+3.1%
'Going to university is too expensive for me and my family' Yes	23%	0%	+5.9%

12.9 percentage points (but only by 1.8 percentage points for other students). The effects are similar for the statement 'going to university is too expensive for me and my family', which shows that people's misperceptions can be corrected.

## Conclusion

Our research indicates that school students have significant gaps in their basic knowledge about the costs and benefits of staying in education and going to university. All the indications are that the hike in fees in late 2010 – and specifically, media reporting of the changes – increased the perception of going to university as 'too expensive'.

This perception was significantly higher in comprehensive schools (compared with independent and selective state schools) and among children eligible for free school meals. If these perceptions influence effort at school or behaviour post-16, this will increase socio-economic inequality in the future.

On the positive side, a fairly light-touch information campaign in schools can reverse some of these negative effects. It can give a more rounded view of the reforms – stressing the availability of grants and how loans can be repaid – rather than focusing on the increase in fees *per se*. An information campaign like the one used in this project can be effective at low cost.

But we should not assume that information gets conveyed in the right

way – or at all – to students. Policy attention should focus on the incentives that schools have to invest time and effort in providing careers information (which is not regulated and does not influence 'league tables') as well as available resources to ensure that information is conveyed in an appropriate way.

This article summarises 'Student Awareness of Costs and Benefits of Educational Decisions: Effects of an Information Campaign' by Martin McGuigan, Sandra McNally and Gill Wyness, Centre for the Economics of Education Discussion Paper No. 139 (<http://cee.lse.ac.uk/ceedps/ceedp139.pdf>).

**Martin McGuigan** is a PhD candidate at Queen's Management School, Belfast.

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The Whats4me website is now freely available: <http://www.whats4.me.uk>

Policy attention  
should focus on  
the incentives  
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to invest time  
and effort in  
providing careers  
information



The UK's coalition government has suggested that both pay and pensions in the public sector are too high relative to the private sector.

**Alexander Danzer** and **Peter Dolton** use the concept of 'total reward' to evaluate this claim, comparing the lifetime compensation available to highly educated men working in the two sectors.



# Are public sector employees overcompensated?





Figure 1:  
Illustration of lifetime income differences  
between the public and private sectors



**R**ecession and public debt problems have created huge pressures to reduce the remuneration of public sector employees in many countries. Greece and Ireland have already done so in nominal terms and most countries will be doing so in real terms over the next couple of years. At the same time, there are growing concerns about ageing populations and the future burden of pension obligations to public sector employees.

Changes to public sector pay, pensions or other conditions of service will have immediate consequences for many things: fiscal budgets, workforce composition, service delivery, inequality and relative remuneration between sectors. So it is essential that any proposed reforms of the total remuneration package available to current and future public sector employees are evaluated carefully.

Even more fundamental is the need to clarify how to measure total remuneration packages so that it is possible to make proper comparisons between sectors. The notion of 'total reward' (TR) has become fashionable in human resource management circles as a way of measuring employees' compensation, but as yet there is no consensus on specifically what TR should include.

We propose the most comprehensive measure of TR to date. It includes not only salary, bonuses, stock options, stock grants,

pensions and other monetary compensation but also hours of work, holiday entitlements, employer-provided health insurance as well as job security (the probability of being made unemployed).

Our new concept measures future benefits in present value terms. For this purpose, we define TR for an

average career in a sector as the total financial benefits and 'in kind' compensation, evaluated in money terms over the lifecycle.

We compare these measures of total compensation for the group of highly educated full-time male employees in the UK public and private sectors who are able to switch easily between the two sectors. This removes the potential difficulty that people initially choose a sector based on decisions that are unobservable to the statistician.

We analyse a new data set that brings together information from the Annual Survey of Hours and Earnings, the Labour Force Survey, the British Household Panel Study and the English Longitudinal Survey of Ageing.

Figure 1 provides the motivation for developing a rigorous definition of TR. It shows real annual remuneration for male graduates working in the public sector (light blue) and private sector (dark blue) from the start of their career to death. The measure comprises earnings, benefits and pensions.

While the two curves start off quite similarly at the age of 21, private sector employees soon develop an income advantage of roughly £5,000 per year, which persists almost up to the age of 50. From the age of 53 onwards, men working in the public sector are better off, including during their retirement years.

For these profiles, we estimate the

value of non-monetary TR components at around 15-20% of total earnings, a non-negligible fraction. The basic question for a proper comparison of public and private sector remuneration (and hence the two shaded areas of the figure) is whether any sector gains a clear monetary advantage over the lifecycle.

The intuition is that once we account for differences in the risk of unemployment, the TR in both sectors should be equal for very similar employees performing equal work. This is based on the long established principle of 'compensating differentials', which assumes that all net disadvantages of a job will be compensated in monetary terms.

The 'total  
reward' for  
highly educated  
male employees  
is roughly  
the same in the  
public sector  
as in the  
private sector



## A new measure of total reward

Our measure of TR is made up of earnings and pensions, as well as an array of new components. The asset value of a defined benefit (DB) pension is evaluated as the sum of the discounted DB benefits from retirement until death (based on certain assumptions about retirement dates and life expectancy). The actual benefit value will depend on the pension plan details provided by different employers (accrual rates, accrual base, initial vesting period, lump sum options and survivors' benefits) as well as specific employee details, such as past earnings and years of service.

DB pension schemes are currently based on terminal salary value at retirement, but this rule is currently being challenged in an attempt to reduce the generosity of public sector DB pensions. The accrual fraction is assumed to be one sixtieth in private sector DB schemes and one eightieth in public sector DB schemes.

Public sector DB schemes provide a three-eighths lump sum per year of tenure, and the private sector DB schemes are assumed not to provide a lump sum payment. All DB schemes have a payment for the surviving spouse of half of the pension entitlement.

The asset value of a defined contribution (DC) plan is calculated by adding up the employer and employee contributions that are paid into the plan and applying real interest rates to the accumulated fund. The fund is then used, on retirement, to buy an annuity, which will yield a stream of earnings until death.

There are several important differences between DB and DC pension schemes:

- First, DB schemes are 'backloaded': they are geared to fractions of final salary in increment-based pay structures based on seniority. In contrast, DC schemes are 'frontloaded': they are based on cash contributions to an annuity fund at each age as a career progresses.
- Second, many DB schemes are portable to other jobs, whereas in the private sector most DC schemes are not.
- Third, DB schemes are basically risk-sharing agreements between the employer (the state) and the employee, while in DC schemes the employee bears the entire interest risk alone.

We suggest that TR at each given age should comprise *accumulated* earnings up to that time plus the accumulated wealth of a pension scheme, evaluated from the career start. But note that DB schemes are based on projected final salaries rather than current earnings. We call our measure 'accumulated lifetime total reward' (ALTR).

Our research is subject to some caveats. For data reasons, our analysis excludes several groups, such as the self-employed, most notably public sector GPs. For the purpose of outlining the concept of TR, we focus on the public and private sectors as two large groups, a perspective that comes closest to the current UK policy debate.

As yet, our research does not evaluate the monetary value of various conditions of work, including stress, control over time, autonomy, flexibility and work pressure. Nor do we make provision for the fact that higher earnings early in the working life in one sector may increase

private savings and asset accumulation. While we acknowledge that the timing of remuneration over the working life may differ between sectors and thus influence individual wealth, we ignore this fact because our principal interest is in work-related remuneration.

We also implicitly ignore the possibility that state investment (for example, in human capital) is different between the public and private sectors. A final caveat is the treatment of diverse kinds of risks: attitudes towards risk (risk aversion) and time preferences (discount factor) may differ between public and private sector employees, but we assume that they are the same.

## Some surprising results for the public-private sector compensation gap

Our ultimate goal is to provide an empirical estimate of TR at any given age and to compare employees in the public and private sectors. The valuation of different TR components is largely driven by the fact that private sector employees have lower pension contributions, fewer and less valuable fringe benefits and higher risks of unemployment.

Evidence on earnings is mixed with a clear dominance of the private sector earnings profile in mid-career and the counterbalance of an advantage for public sector employees at later stages of their working lives. But private sector employees work more hours per week, which implies potentially larger annual earnings throughout their entire working lives.

To value TR across sectors at every point in time (age), we add up all components. The constituent parts of our calculations are represented in Figure 2 as the lifecycle unfolds. The 'zero' line represents equality in the two sectors. Positive values represent an advantage to the public sector and negative values represent an advantage to the private sector.

The top left panel of Figure 2 shows the well-known fact that there is a substantial earnings advantage of working in the private sector for highly educated male employees between the ages of 30 and 50, while earnings in the public sector are more valuable towards the end of the working life.

The top right panel plots the current value of lifetime earnings including fringe

For men, the early career advantage of working in the private sector is balanced by the long-run advantage of being in the public sector



benefits, which results in more favourable results for private sector employees at retirement. Pension wealth (in the bottom left panel) is always substantially more favourable in the public sector, a fact that drives much of the debate about public sector remuneration.

Once we combine these different components in the bottom right panel, our ALTR picture emerges, which shows no advantage for men of either sector at retirement age. ALTR indeed leads to very different conclusions than any of the components.

Our analysis suggests that there is not equality of TR profiles between the two sectors at every point in time. Yet the ALTR for men is equalised between the public and private sectors over the lifecycle, suggesting that the private sector earnings advantage at younger ages is counterbalanced by the more generous benefits associated with public sector pension schemes.

This result implies that male graduates who choose employment in either of the two sectors based on their potential early career reward prospects might get a biased signal with respect to lifetime reward. Our results for women (not shown here) suggest that they are better off in the public sector at almost any point of the lifecycle profile.

If employees in both sectors are exposed to similar disadvantages in the workplace (for example, stress or mortality risk), our results imply that after taking account of pensions, the public sector confers a high positive TR advantage for women but a very closely comparable one for men in the two sectors. This equalisation of total lifetime remuneration means, for men, that the early career advantage of being in the private sector is balanced by the long-run advantage of being in the public sector later.

The insights from this exercise are straightforward: while the pensions of

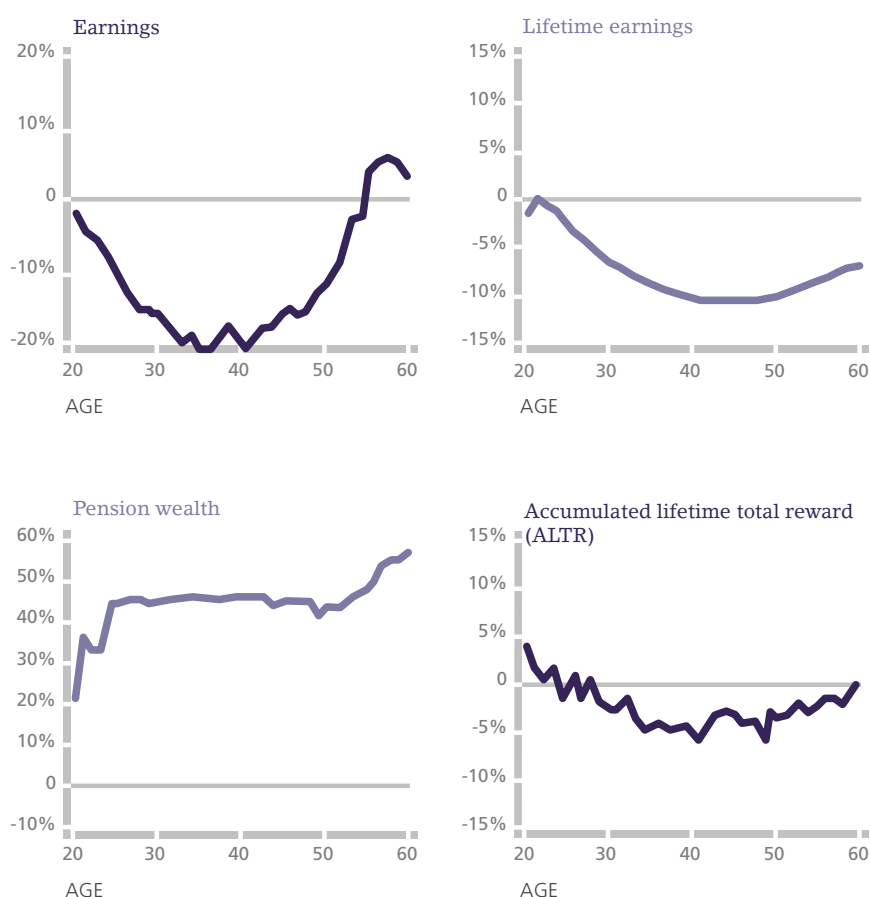
highly educated men working in the public sector are quite generous, there is no clear advantage of either sector once we take account of the full complexity of the comparison. This should caution policy-makers not to reform public sector compensation packages prematurely, unless they accept the implications that this might have for the quality of employees they can recruit and retain.

This article summarises 'Total Reward and Pensions in the UK in the Public and Private Sectors' by Alexander Danzer and Peter Dolton, *Labour Economics* 19(4): 584-94 (August 2012).

**Alexander Danzer** is at the University of Munich. **Peter Dolton** of the University of Sussex is a senior research fellow in CEP's education and skills programme.

Figure 2:

Public sector premiums (in percentages) for highly educated men according to earnings, lifetime earnings, pension wealth and 'accumulated total lifetime reward' (ALTR)



Women are better off in the public sector at almost any point in their lifecycle



in brief...

## Mother tongue: the economics of language learning

In cities where two or more languages are widely spoken, what determines whether people whose mother tongue is a minority language are willing to learn the majority language? **Javier Ortega** and **Gregory Verdugo** look at the drivers of language assimilation in the English- and French-majority cities of Canada.

In bilingual countries like Canada, there are often heated debates about the role of languages. This may be because it is rare for bilingualism to be purely symmetric (one language tends to be dominant) or because of fears that over time fewer people will speak the non-dominant language. What's more, if the population of a bilingual country grows through immigration, the choices that immigrants make about learning either or both of the national languages may alter the balance between them.

The case of Canada is particularly interesting. A majority of Canadian residents have English as their mother tongue (nearly three fifths, according to the 2006 census), but native francophones constitute an important group (more than a fifth) and French is the majority language in certain parts of the country. What's more, around a sixth of Canadian residents have neither English nor French as their mother tongue – they are 'allophones' – and this proportion varies widely across the country.

Among English-majority cities, Ottawa has a large francophone minority (nearly a third) and a relatively small proportion of allophones (less than a sixth). In contrast, Toronto is characterised by a large allophone minority (more than a third) and a tiny francophone minority (not much more than one in a hundred). Across French-majority cities, Quebec City is overwhelmingly francophone (95%) while an eighth of Montreal's residents are anglophones and more than a sixth of them are allophones.

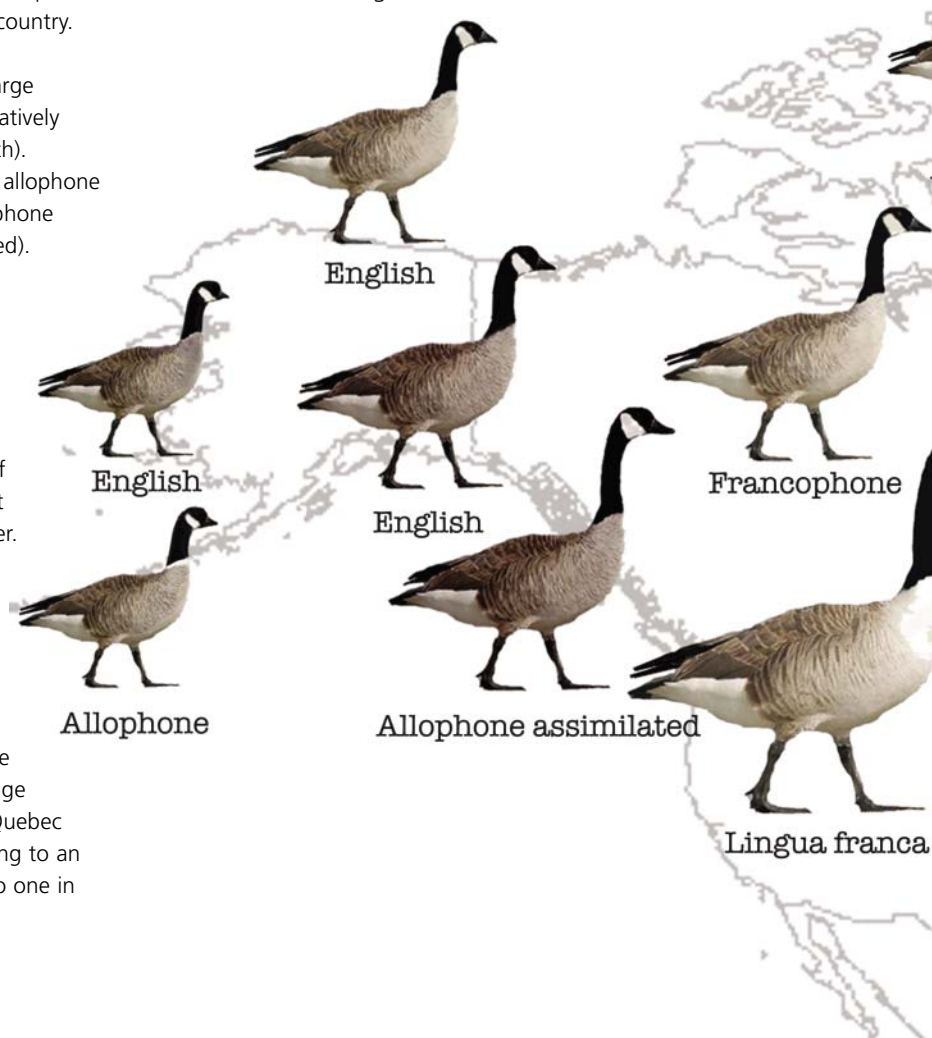
In the past, legislation has had the clear aim of encouraging immigrants or minorities to adopt one of the two languages rather than the other. For example, provincial educational acts after 1867 banned the use of French as a medium of instruction in state schools and stopped funding French-speaking schools except in Quebec and Ontario.

Even after the 1969 Official Language Act gave official co-status to English and French, language issues remained politically sensitive. In 1977, Quebec passed a law that prevented children from going to an English school unless their parents had been to one in

Quebec. While this legislation has been partly overturned, the children of immigrants in Quebec can still only attend schools that teach in French.

From an economic viewpoint, learning a language is an investment that pays whenever the financial or time costs are covered by the returns to the investment. Assuming that enough economic transactions take place within a city, we would expect the returns to learning the majority language for a minority resident to be higher when the majority language is more widely spoken and lower if the minority language is widely spoken.

At the same time, if some economic transactions take place at a national or wider level, we would expect that in Canada, more people would learn English than French. After all, English is the country's majority language and the world's current *lingua franca*.



## Francophone Canadians assimilate into English-majority cities more than anglophones into French-majority cities

Using data from the 2001 and 2006 censuses, we make use of the variation in the language composition of Canadian cities to study the determinants of the assimilation of minority language speakers into a city's majority language – whether they are allophones, francophones in English-majority cities or anglophones in French-majority cities.

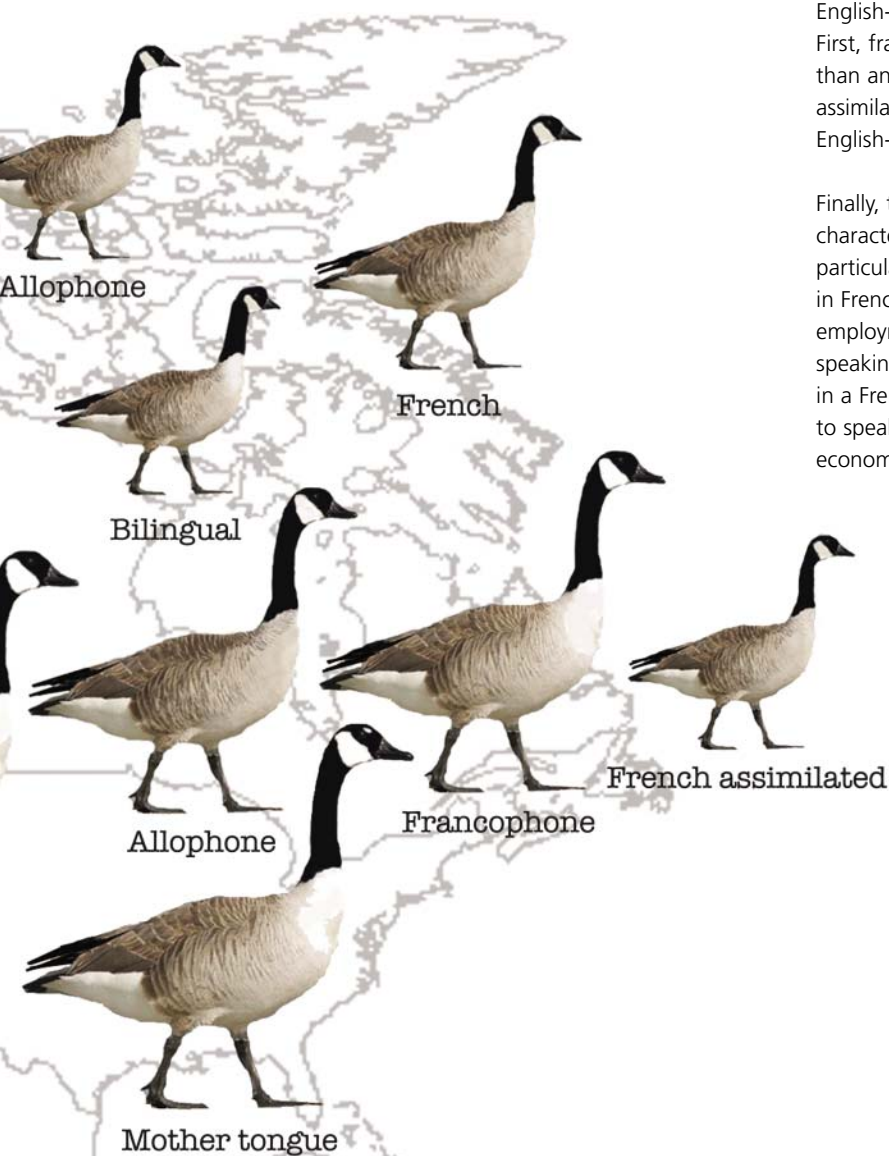
Our research shows that official mother tongue speakers who are in a minority in a city assimilate less into the city's majority language than allophones. This could arise from the institutions of Canada's official bilingualism, such as the right for Canadian citizens whose mother tongue is English or French to get education in that same

language everywhere in Canada (when the number of children so warrants).

The language composition of cities is an important factor behind the assimilation of allophones in both types of city. Specifically, allophones are more likely to speak the city's majority language the larger the population share of majority language speakers and the smaller the number of speakers of their own mother tongue. Similarly, official minorities are more likely to speak the majority language the smaller their own group.

Our research also finds that assimilation into French in French-majority cities and assimilation into English in English-majority cities are asymmetric in several respects. First, francophones assimilate into English more than anglophones into French. Second, allophone assimilation is lower in French-majority cities than in English-majority cities.

Finally, the impact on assimilation of several individual characteristics varies across the two types of city. In particular, the likelihood of anglophones speaking French in French-majority cities is more sensitive to their employment status than the likelihood of francophones speaking English in English-majority cities: if anglophones in a French-majority city are in work, they are more likely to speak French. This is a further indication of the economics that underlies the decision to learn a language.



This article summarises 'Assimilation in Multilingual Cities' by Javier Ortega and Gregory Verdugo, CEP Discussion Paper No. 1110 (<http://cep.lse.ac.uk/pubs/download/dp1110.pdf>).

**Javier Ortega** is a senior lecturer in economics at City University London and a research economist in CEP's labour markets programme. **Gregory Verdugo** is a research fellow at the Banque de France.



in brief...

## Gender gaps in performance: evidence from young lawyers

Are differences in earnings between highly skilled men and women the result of differences in performance – and if so, what explains the gender gaps in performance? **Ghazala Azmat** and **Rosa Ferrer** explore these questions by analysing data on the careers of young American lawyers who graduated at the turn of the millennium.

In recent times, women have reached many senior positions in the worlds of politics, business and science. But their under-representation at the top remains a mystery, especially given the numbers coming through. In the United States, for example, nearly a third of people who get an MBA are women; and the share of female law school graduates and female PhD holders is now almost 50%.

To understand differences in the attainment – and hence the compensation – of highly skilled men and women, we need to ask whether there are gender differences in performance. With performance being notoriously difficult to measure (especially in highly skilled occupations), the legal profession provides an ideal setting: it uses annual performance indicators that are relatively easy to measure, transparent and allow for comparisons between people working in different companies.

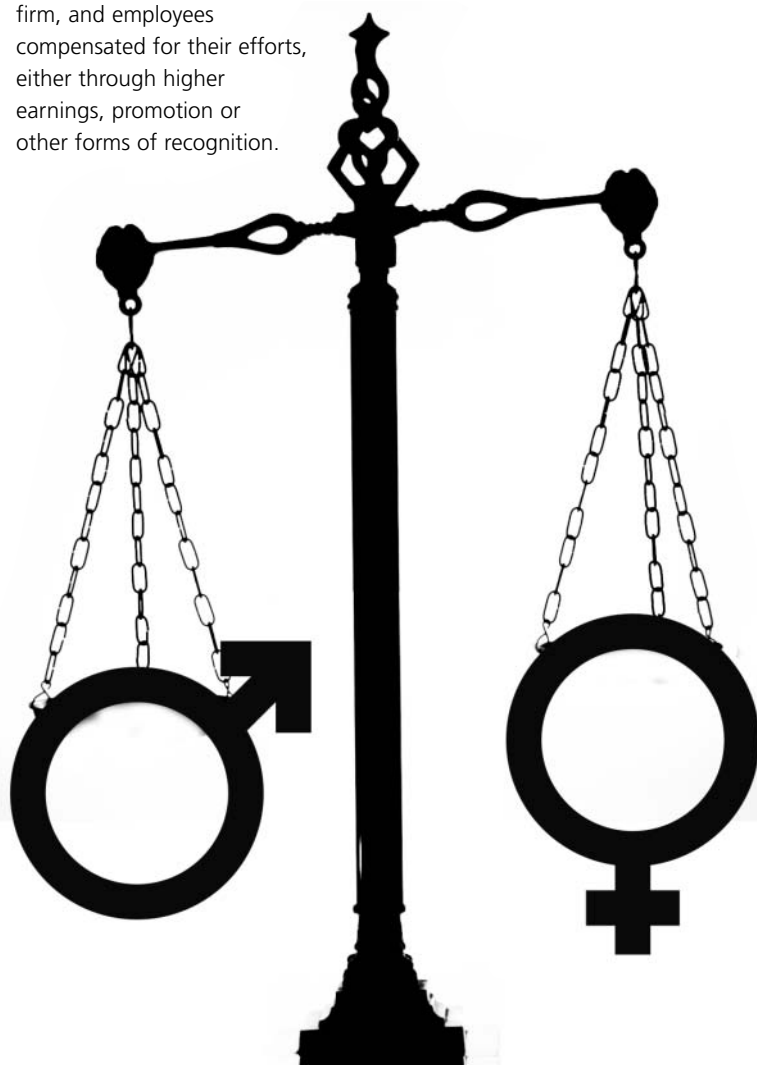
Lawyers' annual performance is evaluated through one measure in particular: the sum of hours billed to clients over the course of the year. Commonly known as billable hours, this method was first introduced in the 1950s and although its use as a performance indicator is not without controversy, it is the predominant tool used by law firms in the United States.

One of the reasons for the success of billable hours is that it accurately measures the revenue generated by the lawyers working in a firm. This is not the same as hours worked, which are usually higher; and more productive lawyers should be able to work less time than others to bill one hour, allowing them to work on more assignments.

A second performance indicator is related to lawyers' ability to generate new clients, as measured by the revenue they generate from new clients. Recommendations from previous clients and other lawyers are important ways to generate new client revenue, so this measure incorporates certain qualitative dimensions of lawyers' performance.

We use data from a nationally representative sample of young Americans, who all graduated from law school in 2000. Initial analysis shows that male lawyers outperform female lawyers on both measures: on average, men bill 10% more hours and generate 50% more revenue from new clients. These are large and important differences, and the likely consequences are higher revenue for the firm, and employees compensated for their efforts, either through higher earnings, promotion or other forms of recognition.

Maternity and aspirations generate differences in work performance between the sexes





## Among young lawyers, a key explanation of gender gaps in performance is the difference between men's and women's desire to 'make partner'

So what explains the gender gaps in performance among these young, highly skilled lawyers? Our research tests a number of hypotheses, the first being discrimination: it may be that senior lawyers influence performance by deciding on the number and type of cases assigned to each lawyer. But this is not what the data indicate: insufficient caseload does affect lawyers' performance, but there is no gender difference in caseload assignment.

The data also show no indication that there are gender differences in assigned tasks, for example, routine tasks versus those that are more intellectually challenging. Nor are the returns to each hour billed significantly different for men compared with women: in other words, billing rates are the same for both.

A second possible explanation is the effect of maternity: the right time to become a parent often coincides with the decisive years for professional success, which generates a choice between career and family responsibilities, one that mainly affects women.

Marie Curie, twice a Nobel laureate, said: 'I have frequently been questioned, especially by women, of how I could reconcile family life with a scientific career. Well, it has not been easy.' According to our analysis, a century later, this statement still holds true: having children of pre-school age adversely affects women but does not affect men. Yet this only explains part of the performance differences.

The final set of explanations is behavioural: for example, a crucial factor in explaining differences in performance could be the desire to 'make partner' – to progress to a more senior position. Asked about their desire to make partner on a scale of 1 to 10, 50% of women responded with 5 or less compared with only 29% of men. This difference in aspiration remains when restricting the analysis to those who have a good chance of making it as partner. It is an important part of the explanation of why male lawyers outperform female lawyers, especially for generating new client revenue.

We also find that men and women differ in their areas of expertise, their time spent 'networking' and working at weekends and their decisions on how to bill their clients. Yet these are much less relevant in explaining performance differences than aspirations. This finding is reminiscent of a comment by Sheryl Sandberg, a senior executive at Facebook, who said that 'as a society, we put more pressure on boys to succeed than we do on our girls'.

So what are the consequences of this difference in performance? Do they help us to explain the wage gap between highly skilled men and women? Yes: performance is actually crucial in explaining the wage gap.

The gender gap in earnings for the lawyers in our data is 20%. Half this gap can be explained by lawyers' characteristics and the size of their firm: working for a large firm pays more. In the absence of performance indicators, the other half would be left unexplained, and the temptation might be to attribute this part to discrimination because there do not seem to be 'observable' differences between the lawyers. But accounting for performance differences, we can explain a large part of the other half.

According to our analysis, maternity and aspirations generate performance differences between the sexes – and these have consequences for employees and the firms that hire them. The impact of maternity has been widely discussed in the context of other outcomes (such as gender gaps in wages and labour market participation) and could, perhaps, be solved with better childcare or parental leave policies.

By contrast, the impact of aspirations seems more complicated and potentially more controversial. Are the differences we find in career aspirations a choice or compliance with a social norm? Our research evidence suggests an answer.

Asked about how satisfied they are with their career progression and opportunities for advancement, the female lawyers in our sample were as satisfied, if not more satisfied, than their male counterparts. While levels of job satisfaction may be driven by a number of factors, they are important indicators of whether these highly skilled women feel fairly treated in the workplace.

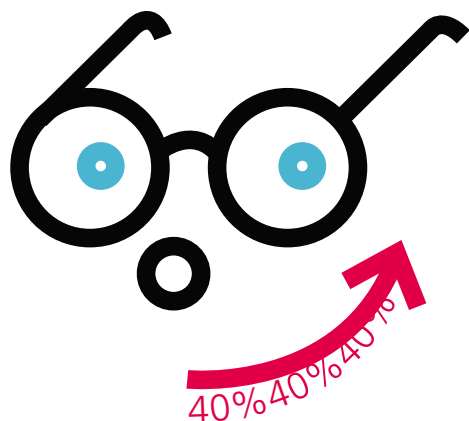
This article summarises 'Gender Gaps in Performance: Evidence from Young Lawyers' by Ghazala Azmat and Rosa Ferrer, CEP Discussion Paper No. 1136 (<http://cep.lse.ac.uk/pubs/download/dp1136.pdf>).

**Ghazala Azmat** is a reader at Queen Mary, University of London, and a research associate in CEP's productivity and innovation programme. **Rosa Ferrer** is an assistant professor at Universitat Pompeu Fabra.

in brief...

## Mental illness and the NHS

A report by **Richard Layard** and colleagues has revealed the shocking scale of mental illness in Britain – and how little the NHS does about it.



Mental illness is now nearly a half of all ill health suffered by people in Britain aged under 65 – and it is more disabling than most chronic physical disease. Yet only a quarter of those experiencing mental health problems receive any form of treatment.

The under-treatment of people with crippling mental illnesses is the most glaring case of health inequality in our country. It is a shocking form of discrimination because although psychological treatments exist, they are not widely available.

Therapies like cognitive behavioural therapy lead to rapid recovery from depression or anxiety disorders in over 40% of cases. If they were more widely available, this would cost the NHS little or nothing because of the savings on physical healthcare. The cost would also be fully covered by savings on incapacity benefits and lost taxes.

For these reasons, the government started an excellent six-year programme in 2008 for Improving Access to Psychological Therapies (IAPT). This is making the situation much better than it was, especially in some areas. But in other areas, local commissioners are failing to fund the necessary expansion and are even cutting mental health provision, especially for children.

Our report calls for four major changes:

- First, it is essential that the IAPT programme is completed as planned, since even this will only provide for 15% of those in need.
- Second, beyond 2015, there should be another major expansion, aimed especially at the millions of people who have mental illness on top of chronic physical conditions.

■ Third, the training of GPs needs to include a rotation in an IAPT service.

■ Fourth, recruitment to psychiatry needs to be increased to handle the more complex cases.

The need for a rethink is urgent. At present, mental healthcare is, if anything, being cut: it should be expanded. This is a matter of fairness – to remedy a gross inequality – and it is a matter of simple economics – the net cost to the NHS would be very small. When everyone praises early intervention, it is particularly shocking that the sharpest cuts today are those affecting young people.

The NHS aims to save £20 billion on existing activities to finance new activities required by new needs, old unmet needs and new technology. Nowhere is the case for extra spending more strong than that for treating mental illness. In mental health, there is massive unmet need and there are new treatments that are only beginning to be rolled out. We appeal to commissioners to think again.



This article summarises 'How Mental Illness Loses Out in the NHS', a report by CEP's Mental Health Policy Group, a distinguished team of economists, psychologists, doctors and NHS managers convened by Richard Layard (<http://cep.lse.ac.uk/pubs/download/special/cepsp26.pdf>).

Professor Lord **Richard Layard** is director of CEP's research programme on wellbeing.

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